0590
0709

#/0

RAW SEQUENCE LISTING   DATE: 07/10/2002 P.6
PATENT APPLICATION: US/09/905,558C   TIME: 13:06:39

Input Set : A:\1016.SEQLIST.TXT
Output Set: N:\CRF3\07102002\I905558C.raw

```
 4 <110> APPLICANT: Garnaat, Carl W.
 5        Lowe, Keith S.
 6        Roth, Bradley A.
 8 <120> TITLE OF INVENTION: ZmAxig1 Polynucleotides and Methods of
 9        Use
11 <130> FILE REFERENCE: 1016
13 <140> CURRENT APPLICATION NUMBER: US 09/905,558C
14 <141> CURRENT FILING DATE: 2002-06-24
16 <150> PRIOR APPLICATION NUMBER: US 60/217,942
17 <151> PRIOR FILING DATE: 2000-07-13
19 <160> NUMBER OF SEQ ID NOS: 21
21 <170> SOFTWARE: FastSEQ for Windows Version 3.0
23 <210> SEQ ID NO: 1
24 <211> LENGTH: 1271
25 <212> TYPE: DNA
26 <213> ORGANISM: Zea mays
28 <220> FEATURE:
29 <221> NAME/KEY: CDS
30 <222> LOCATION: (170)...(763)
32 <400> SEQUENCE: 1
33  gcaggaactt atttgccgtg cgctcccagg tctccgctcg cgtgccttcc agtctgtctc      60
34  acactagctg ctgtgggacg atcgaagtgg gtgtgtcagc tagctagctg cgccgtgacc     120
35  acgcacatga ccgcagtgcg cgcggggctg atcaagggaa agtgatcgg atg gag ctg     178
36                                                          Met Glu Leu
37                                                            1
39  gag ctc ggg ctc gcg ccg ccg aac ccg cat cag ccg ctg gct gcc gcc      226
40  Glu Leu Gly Leu Ala Pro Pro Asn Pro His Gln Pro Leu Ala Ala Ala
41      5                   10                  15
43  gcc gag ttc gtc ggt ctc ctc agc agc tcg gct ggc tcg tgc ggg aac      274
44  Ala Glu Phe Val Gly Leu Leu Ser Ser Ser Ala Gly Ser Cys Gly Asn
45   20                  25                  30                  35
47  aag agg gtt ctc ggc gac gcg ttc ggg gcc gcc aag gcg gcc acg ctt      322
48  Lys Arg Val Leu Gly Asp Ala Phe Gly Ala Ala Lys Ala Ala Thr Leu
49                  40                  45                  50
51  ccg ctc ttc gtc tgc gag gat ggc gac gga ggc ggc ggc gac cgc gac      370
52  Pro Leu Phe Val Cys Glu Asp Gly Asp Gly Gly Gly Gly Asp Arg Asp
53              55                  60                  65
55  cgc gac ggc gtc gtc gac cat gaa cag caa agc aac aat gta ccc agg      418
56  Arg Asp Gly Val Val Asp His Glu Gln Gln Ser Asn Asn Val Pro Arg
57          70                  75                  80
59  aag aag agg ctg gtg ggg tgg ccg ccg gtg aag tgc gcg cgt agg cgt      466
60  Lys Lys Arg Leu Val Gly Trp Pro Pro Val Lys Cys Ala Arg Arg Arg
61      85                  90                  95
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RAW SEQUENCE LISTING   DATE: 07/10/2002
PATENT APPLICATION: US/09/905,558C   TIME: 13:06:39

Input Set : A:\1016.SEQLIST.TXT
Output Set: N:\CRF3\07102002\I905558C.raw

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63  agc tgc ggc ggc ggg tac gtg aag gtg aag ctg gaa ggg gtg ccc atc    514
64  Ser Cys Gly Gly Gly Tyr Val Lys Val Lys Leu Glu Gly Val Pro Ile
65  100             105             110             115
67  ggg cgg aag gtg gac gtg tcc atc cac ggc tcg tac cag gag ctg ctc    562
68  Gly Arg Lys Val Asp Val Ser Ile His Gly Ser Tyr Gln Glu Leu Leu
69          120             125             130
71  cgc acg ctc gag agc atg ttc cct tcg ggt aac caa caa gat cat gca    610
72  Arg Thr Leu Glu Ser Met Phe Pro Ser Gly Asn Gln Gln Asp His Ala
73          135             140             145
75  gaa gac gag gtg gtg gtc tcg cac gag cgc cgc cgt cgc cat cct tat    658
76  Glu Asp Glu Val Val Val Ser His Glu Arg Arg Arg Arg His Pro Tyr
77          150             155             160
79  gta gtc acc tac gag gac ggc gaa ggg gac tgg ttg ctc gtc gga gat    706
80  Val Val Thr Tyr Glu Asp Gly Glu Gly Asp Trp Leu Leu Val Gly Asp
81          165             170             175
83  gat gtg ccg tgg gag gtc ttt gtc aag tca gtg aag cgg ctc aag ata    754
84  Asp Val Pro Trp Glu Val Phe Val Lys Ser Val Lys Arg Leu Lys Ile
85  180             185             190             195
87  ctt gcg tag ccgacggtcg gcgcctcaga gacgtcgtgt ggtccgtctc          803
88  Leu Ala  *
91  accaggatcg gagcagtgta gtactcctgg gcgtcatctg cgtaataacg ttgtttctgt   863
92  cctgtgtgcc cgtagcagta cgtactgtcc tatagtaagc tagctttatg gggtgcttca   923
93  gctttcagag catgacgaaa gcactgatta gctgctgtca tcacatttgg ttcgtctttg   983
94  tgtcgtacgg tatcgctggc gtcagtgtcg cggcagccta ggtgatctaa gcatacttac  1043
95  tatctcaagt tacttttggt ttcctgagct tgcatggtaa ttcatatacc gtatacgtgt  1103
96  gtgactcagg ggcgaagctg ccttaaggca caggggtcac cggacccgat ggaatttatc  1163
97  aaatccagtg taaaatacta tttaacactg ttcatcaata tatttgattt caataaaaaa  1223
98  aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaa              1271
```

100 <210> SEQ ID NO: 2
101 <211> LENGTH: 197
102 <212> TYPE: PRT
103 <213> ORGANISM: Zea mays
105 <400> SEQUENCE: 2

```
106  Met Glu Leu Glu Leu Gly Leu Ala Pro Pro Asn Pro His Gln Pro Leu
107  1               5               10              15
108  Ala Ala Ala Ala Glu Phe Val Gly Leu Leu Ser Ser Ser Ala Gly Ser
109          20              25              30
110  Cys Gly Asn Lys Arg Val Leu Gly Asp Ala Phe Gly Ala Ala Lys Ala
111          35              40              45
112  Ala Thr Leu Pro Leu Phe Val Cys Glu Asp Gly Asp Gly Gly Gly Gly
113  50              55              60
114  Asp Arg Asp Arg Asp Gly Val Val Asp His Glu Gln Gln Ser Asn Asn
115  65              70              75              80
116  Val Pro Arg Lys Lys Arg Leu Val Gly Trp Pro Pro Val Lys Cys Ala
117          85              90              95
118  Arg Arg Arg Ser Cys Gly Gly Gly Tyr Val Lys Val Lys Leu Glu Gly
119          100             105             110
120  Val Pro Ile Gly Arg Lys Val Asp Val Ser Ile His Gly Ser Tyr Gln
121          115             120             125
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RAW SEQUENCE LISTING   DATE: 07/10/2002
PATENT APPLICATION: US/09/905,558C   TIME: 13:06:39

Input Set : A:\1016.SEQLIST.TXT
Output Set: N:\CRF3\07102002\I905558C.raw

```
122  Glu Leu Leu Arg Thr Leu Glu Ser Met Phe Pro Ser Gly Asn Gln Gln
123      130             135             140
124  Asp His Ala Glu Asp Glu Val Val Val Ser His Glu Arg Arg Arg Arg
125  145             150             155             160
126  His Pro Tyr Val Val Thr Tyr Glu Asp Gly Glu Gly Asp Trp Leu Leu
127              165             170             175
128  Val Gly Asp Asp Val Pro Trp Glu Val Phe Val Lys Ser Val Lys Arg
129          180             185             190
130  Leu Lys Ile Leu Ala
131          195
133  <210> SEQ ID NO: 3
134  <211> LENGTH: 1310
135  <212> TYPE: DNA
136  <213> ORGANISM: Zea mays
138  <400> SEQUENCE: 3
139  cccatcgctg ctttgtctac atcatgttct tcatcatcct ccccaggcga cgcgtgctgc    60
140  tgttcttatt cagactaccg ttcgagtgac tgcatggcgt acatctttct gcatcgactt   120
141  tgtacggcta catcgaacat atacacgaga tgtctcgtgt gaatagagtc actaatgcct   180
142  taagcatcgg ttactccgta gggtacattc tgttcttctt atttgtgcat atttttattg   240
143  ttgtttactg attatacgag tagttataca tacatgcaca tacatatcat cacatatatc   300
144  acaatatttt tctaaattaa attaaaacta aaaatgacta aatttctaac accaacgaca   360
145  ttgtaatgtt ttctccaaca actttaccta ttctacattg ttctatttcg aatttcactc   420
146  tataaacaac atagtctaca atggaaaaca gtgctttgta cgactatata cgcgatgtgt   480
147  ggctacaaca taagacaata tagtcgtttg aagattgaac ctatatatcg gtacggttaa   540
148  tccgtctatg tacgtgggca tgacgaacac ccgtgataac gaaggattaa cgtgcacaat   600
149  cataaatcca aagtaggagc ggtgcatgat gagaatcgct ctcagtactc gacataatga   660
150  accttacgag gtacaacagg caggcaggca gggaccaggg gccgccttta tttcaggctc   720
151  gctggcccca cgggcgtgct gcgtgcacga agggcactac cccaacctct caccgaaaaa   780
152  ccgcgctgga tcggcaaatc aaacgaggtg gtgccccgtg cccactctcc acgtccacgg   840
153  caccatccct ctgcagccgc tcaccagcca tgccgtgtcg cggaacggca caaccacccc   900
154  caacccactc acgaaacccc gtcccggccg tgcccgtgtc ggtccgcgct cggcaacgag   960
155  gcggcccgcg ctgctgagtc ccctggacac ccgacaccct gtcggccctt tgtttattca  1020
156  tcccgaaatc tcatctgccc ccacggccga ctgcgctgcg ccgcccggat atatataccc  1080
157  atcgttatcg atcgatcgat cgcgtcactc acgggtagct catggtcgag cgtagcatgc  1140
158  aggaacttat ttgccgtgcg ctcccaggtc tccgctcgcg tgccttccag tctgtctcac  1200
159  actagctgct gtgggacgat cgaagtgggt gtgtcagcta gctagctgcg ccgtgaccac  1260
160  gcacatgacc gcagtgcgcg cggggctgat caagggaaag tgatcggatg             1310
162  <210> SEQ ID NO: 4
163  <211> LENGTH: 1310
164  <212> TYPE: DNA
165  <213> ORGANISM: Zea mays
167  <400> SEQUENCE: 4
168  cccatcgctg ctttgtctac atcatgttct tcatcatcct ccccaggcga cgcgtgctgc    60
169  tgttcttatt cagactaccg ttcgagtgac tgcatggcgt acatctttct gcatcgactt   120
170  tgtacggcta catcgaacat atacacgaga tgtctcgtgt gaatagagtc actaatgcct   180
171  taagcatcgg ttactccgta gggtacattc tgttcttctt atttgtgcat atttttattg   240
172  ttgtttactg attatacgag tagttataca tacatgcaca tacatatcat cacatatatc   300
173  acaatatttt tctaaattaa attaaaacta aaaatgacta aatttctaac accaacgaca   360
174  ttgtaatgtt ttctccaaca actttaccta ttctacattg ttctatttcg aatttcactc   420
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RAW SEQUENCE LISTING   DATE: 07/10/2002
PATENT APPLICATION: US/09/905,558C   TIME: 13:06:39

Input Set : **A:\1016.SEQLIST.TXT**
Output Set: **N:\CRF3\07102002\I905558C.raw**

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175  tataaacaac atagtctaca atggaaaaca gtgctttgta cgactatata cgcgatgtgt    480
176  ggctacaaca taagacaata tagtcgtttg aagattgaac ctatatatcg gtacggttaa    540
177  tccgtctatg tacgtgggca tgacgaacac ccgtgataac gaaggattaa cgtgcacaat    600
178  cataaatcca aagtaggagc ggtgcatgat gagaatcgct ctcagtactc gacataatga    660
179  accttacgag gtacaacagg caggcaggca gggaccaggg gccgccttta tttcaggctc    720
180  gctggcccca cgggcgtgct gcgtgcacga agggcactac cccaacctct caccgaaaaa    780
181  ccgcgctgga tcggcaaatc aaacgaggtg gtgccccgtg cccactctcc acgtccacgg    840
182  caccatccct ctgcagccgc tcaccagcca tgccgtgtcg cggaacggca caaccacccc    900
183  caacccactc acgaaacccc gtcccggccg tgcccgtgtc ggtccgcgct cggcaacgag    960
184  gcggcccgcg ctgctgagtc ccctggacac ccgacaccct gtcggccctt tgtttattca    1020
185  tcccgaaatc tcatctgccc ccacggccga ctgcgctgcg ccgcccggat atatataccc    1080
186  atcgttatcg atcgatcgat cgcgtcactc acgggtagct catggtcgag cgtagcatgc    1140
187  aggaacttat ttgccgtgcg ctcccaggtc tccgctcgcg tgccttccag tctgtctcac    1200
188  actagctgct gtgggacgat cgaagtgggt gtgtcagcta gctagctgcg ccgtgaccac    1260
189  gcacatgacc gcagtgcgcg cggggctgat caagggaaag tgatcccatg                1310
191 <210> SEQ ID NO: 5
192 <211> LENGTH: 3123
193 <212> TYPE: DNA
194 <213> ORGANISM: Zea mays
196 <400> SEQUENCE: 5
197  cccatcgctg ctttgtctac atcatgttct tcatcatcct ccccaggcga cgcgtgctgc    60
198  tgttcttatt cagactaccg ttcgagtgac tgcatggcgt acatctttct gcatcgactt    120
199  tgtacggcta catcgaacat atacacgaga tgtctcgtgt gaatagagtc actaatgcct    180
200  taagcatcgg ttactccgta gggtacattc tgttcttctt atttgtgcat atttttattg    240
201  ttgtttactg attatacgag tagttataca tacatgcaca tacatatcat cacatatatc    300
202  acaatatttt tctaaattaa attaaaacta aaaatgacta aatttctaac accaacgaca    360
203  ttgtaatgtt ttctccaaca actttaccta ttctacattg ttctatttcg aatttcactc    420
204  tataaacaac atagtctaca atggaaaaca gtgctttgta cgactatata cgcgatgtgt    480
205  ggctacaaca taagacaata tagtcgtttg aagattgaac ctatatatcg gtacggttaa    540
206  tccgtctatg tacgtgggca tgacgaacac ccgtgataac gaaggattaa cgtgcacaat    600
207  cataaatcca aagtaggagc ggtgcatgat gagaatcgct ctcagtactc gacataatga    660
208  accttacgag gtacaacagg caggcaggca gggaccaggg gccgccttta tttcaggctc    720
209  gctggcccca cgggcgtgct gcgtgcacga agggcactac cccaacctct caccgaaaaa    780
210  ccgcgctgga tcggcaaatc aaacgaggtg gtgccccgtg cccactctcc acgtccacgg    840
211  caccatccct ctgcagccgc tcaccagcca tgccgtgtcg cggaacggca caaccacccc    900
212  caacccactc acgaaacccc gtcccggccg tgcccgtgtc ggtccgcgct cggcaacgag    960
213  gcggcccgcg ctgctgagtc ccctggacac ccgacaccct gtcggccctt tgtttattca    1020
214  tcccgaaatc tcatctgccc ccacggccga ctgcgctgcg ccgcccggat atatataccc    1080
215  atcgttatcg atcgatcgat cgcgtcactc acgggtagct catggtcgag cgtagcatgc    1140
216  aggaacttat ttgccgtgcg ctcccaggtc tccgctcgcg tgccttccag tctgtctcac    1200
217  actagctgct gtgggacgat cgaagtgggt gtgtcagcta gctagctgcg ccgtgaccac    1260
218  gcacatgacc gcagtgcgcg cggggctgat caagggaaag tgatcggatg gagctggagc    1320
219  tcgggctcgc gccgccgaac ccgcatcagc cgctggctgc cgccgccgag ttcgtcggtc    1380
220  tcctcagcag ctcggctggc tcgtgcggga acaagagggt tctcggcgac gcgttcgggg    1440
221  ccgccaaggc ggccacgctt ccgctcttcg tctgcgagga tggcgacgga ggcggcggcg    1500
222  accgcgaccg cgacggcgtc gtcgaccatg aacagcaaag caacaagtga gttgtggtta    1560
223  aaaataccga ccacgtgcgt acagggaggg tcttattata cccaaatccg atccgtggtg    1620
224  tgtgtagtgt acccaggaag aagaggctgg tggggtggcc gccggtgaag tgcgcgcgta    1680
225  ggcgtagctg cggcggcggg tacgtgaagg tgaagctgga aggggtgccc atcgggcgga    1740
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RAW SEQUENCE LISTING   DATE: 07/10/2002
PATENT APPLICATION: US/09/905,558C   TIME: 13:06:39

Input Set : A:\1016.SEQLIST.TXT
Output Set: N:\CRF3\07102002\I905558C.raw

```
226  aggtggacgt gtccatccac ggctcgtacc aggagctgct ccgcacgctc gagagcatgt  1800
227  tcccttcggg taaccaacaa ggtgcgtacg ttcccgggcc gcggcgagcc ggccggcgac  1860
228  cggcggtgct gcggacgatg cctttctttc actgataatc atctgccgcc atcgttctgg  1920
229  tcccgacacg tgcccttgct tcccgttctg ctcccggcac ttaacttggt cgcatatact  1980
230  attcctgtaa cctctggcag atcatgcaga agacgaggtg gtggtctcgc acgagcgccg  2040
231  ccgtcgccat ccttatgtag tcacctacga ggacggcgaa ggggactggt tgctcgtcgg  2100
232  agatgatgtg ccgtgggagt acgtatcagt cactactact gtcgtctgta tgactgtatc  2160
233  gatggtgacg gcaacaatat aatccaatta attattcagc gaacttaaaa acgacgttga  2220
234  tttccttgca gggtctttgt caagtcagtg aagcggctca agatacttgc gtagccgacg  2280
235  gtcggcgcct cagagacgtc gtgtggtccg tctcaccagg atcggagcag tgtagtactc  2340
236  ctgggcgtca tctgcgtaat aacgttgttt ctgtcctgtg tgcccgtagc agtacgtact  2400
237  gtcctatagt aagctagctt tatggggtgc ttcagctttc agagcatgac gaaagcactg  2460
238  attagctgct gtcatcacat ttggttcgtc tttgtgtcgt acggatcgc tggcgtcagt  2520
239  gtcgcggcag cctaggtgat ctaagcatac ttactatctc aagttacttt tggtttcctg  2580
240  agcttgcatg gtaattcata taccgtatac gtgtgtgact caggggcgaa gctgccttaa  2640
241  ggcacagggg tcaccggacc cgatggaatt tatcaaatcc agtgtaaaat actatttaac  2700
242  actgttcatc aatatatttg atttcaataa ttcatggagc tgaccttgtg gatccatttt  2760
243  ctgtcttcgc ctctggtgtg actagtattt tggtttgact tttcactctg tataagatat  2820
244  atattatacc agcgagttta tcgactgcta gttttacaag aggcttaact ctttcaattg  2880
245  cttattttta ttgcaacaac acactcctcc gttgttgtgg tattagatgt ggttctgaat  2940
246  gtaaatgtca ttataggata taaatgtagt gtttcctagt tttaccctag ctttcgcatg  3000
247  catagtggga aagtgtacta actctcctca tgcagaaaga ggtgtggtat acctaacaaa  3060
248  atcatacatc actactaatc tacggataat atatataaac cgtagcgaca cacgagtgct  3120
249  tag                                                                3123
251  <210> SEQ ID NO: 6
252  <211> LENGTH: 28
253  <212> TYPE: DNA
254  <213> ORGANISM: Zea mays
256  <400> SEQUENCE: 6
257   agcagctagt gtgagacaga ctggaagg                                      28
259  <210> SEQ ID NO: 7
260  <211> LENGTH: 28
261  <212> TYPE: DNA
262  <213> ORGANISM: Artificial Sequence
264  <220> FEATURE:
265  <223> OTHER INFORMATION: Zea mays
267  <400> SEQUENCE: 7
268   gtacattgtt gctttgctgt tcatggtc                                      28
270  <210> SEQ ID NO: 8
271  <211> LENGTH: 29
272  <212> TYPE: DNA
273  <213> ORGANISM: Zea mays
275  <400> SEQUENCE: 8
276   ctccagctcc atccgatcac tttcccttg                                     29
278  <210> SEQ ID NO: 9
279  <211> LENGTH: 29
280  <212> TYPE: DNA
281  <213> ORGANISM: Zea mays
283  <400> SEQUENCE: 9
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RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 07/10/2002
PATENT APPLICATION: US/09/905,558C   TIME: 13:06:40

Input Set : A:\1016.SEQLIST.TXT
Output Set: N:\CRF3\07102002\I905558C.raw

<u>Please Note:</u>
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the
Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:20; N Pos. 236,242,257,276,420,457,463,470,486,508,540,554,580,586,596
Seq#:21; Xaa Pos. 5,6,18,19,22,33,45,47,51,54,55,56,57,61,62,63,65

VERIFICATION SUMMARY
PATENT APPLICATION: US/09/905,558C

DATE: 07/10/2002
 TIME: 13:06:40

Input Set : **A:\1016.SEQLIST.TXT**
Output Set: **N:\CRF3\07102002\I905558C.raw**

```
L:14 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:461 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:20 after pos.:180
L:462 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:20 after pos.:240
L:464 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:20 after pos.:360
L:465 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:20 after pos.:420
L:466 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:20 after pos.:480
L:467 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:20 after pos.:540
L:481 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:21 after pos.:0
L:483 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:21 after pos.:16
L:485 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:21 after pos.:32
L:487 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:21 after pos.:48
L:489 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:21 after pos.:64
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